Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on June 17-18, 2020

June 17 and 18, 2020

Minutes of the Canadian Nuclear Safety Commission (CNSC) meeting held virtually on June 17–18, 2020 beginning at 9:00 a.m. The President and several CNSC staff participated from the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario. These minutes reflect both the public meeting itself and the Commission's decisions taken as a result of the meeting.

Present:

R. Velshi, President
T. Berube
S. Demeter
M. Lacroix
S. McKinnon

M. Leblanc, Secretary
L. Thiele, Senior General Counsel
W. Khan, C. Moreau and M. Hornof, Recording Secretaries

CNSC staff advisors were: R. Jammal, G. Frappier, H. Tadros, L. Casterton, P. Fundarek, K. Murthy, K. Heppel-Masys, C. Cole, R. Walker-Sisttie, J. Cameron, P. Elder, H. Robertson, N. Kwamena, C. Howden, S. Faille, C. Purvis, L. Forrest, K. Glenn, N. Greencorn, B. Torrie, J. Brown, E. Dagher, S. Nguyen, A. McAllister, M. Herod, M. Kostova and P. Fraser

Other contributors were:

- Ontario Power Generation: J. Vecchiarelli, S. Smith, S. Haseen, S. Burns, J. Knox and J. Mauti
- Bruce Power: M. Burton
- New Brunswick Power: J. Nouwens
- Hydro-Québec: D. Olivier
- Cameco Corporation: L. Mooney
- SRB Technologies (Canada) Inc.: S. Levesque
- Canadian Nuclear Laboratories: C. Williams
- McMaster University: J. Zic and C. Heysel
- BWXT Nuclear Energy Canada Inc.: D. Snopek
- Emergency Management Ontario: T. Khawja and R. Lazarus
- Municipality of Clarington: A. Foster
- City of Pickering: K. Ashe
- NB Emergency Measures Organization: G. MacCallum
- Health Canada: B. Ahier
- Natural Resources Canada: J. Delaney
- Independent Electricity System Operator: P. Gregg and L. Kula
- Alberta Health Services: J. Lee

e-Docs 6358488 (Word)
e-Docs 6380790 (PDF)

Constitution

1. With the notice of meeting Commission Member Document (CMD) 20-M6 having been properly given and all permanent Commission members being present, the meeting was declared to be properly constituted.

2. Since the Commission meeting held March 3, 2020, CMD 20-M9 to CMD 20-M11, CMD 20-M13 to CMD 20-M15 and CMD 20-M17 were distributed to members. These documents are further detailed in Appendix A of these minutes.

Adoption of the Agenda

3. The agenda, CMD 20-M7, was adopted as presented.

Chair and Secretary

4. The President chaired the meeting of the Commission, assisted by M. Leblanc, Secretary and M. Hornof, C. Moreau, and W. Khan, Recording Secretaries.

Minutes of the CNSC Meeting Held March 3, 2020

5. The Commission secretarially approved the minutes of the March 3, 2020 Commission meeting as presented in CMD 20-M8.

STATUS REPORT ON POWER REACTORS

6. With reference to CMD 20-M10, which includes the Status Report on Power Reactors and an update on the CNSC staff and licensees' responses to the COVID-19 pandemic (the pandemic), CNSC staff presented the following updates:

    - Bruce Nuclear Generating Station (NGS) Unit 4 was at 89% of full power (FP) and was returning to FP; and
    - Pickering NGS Unit 1 was at 65% of FP and was returning to FP

7. CNSC staff reported that on March 15, 2020, the CNSC activated its Business Continuity Plan (BCP), which resulted in Ottawa and site staff working from home and temporarily discontinuing onsite inspections across all nuclear power plants

(NPPs). CNSC staff added that effective regulatory oversight has been maintained during the pandemic. This has been facilitated by CNSC inspectors being provided with virtual private network (VPN) access to the licensees' information systems. Further, CNSC staff reported that on May 4, 2020 a revised pre-job briefing procedure was issued based on COVID-19 protocol directions provided by the Government of Canada and licensees. On May 5, 2020 limited onsite inspections at licensees' facilities resumed.

Comments from Industry Representatives

8. An OPG representative submitted that as part of pandemic planning, OPG, Bruce Power and NB Power were well prepared and had a sufficient inventory of protective equipment for their workers. The OPG representative added that OPG had taken a number of measures since the early onset of the COVID-19 virus to minimize the risk of transmission and to reduce the risk the COVID-19 virus poses to workers' physical and mental health. The measures include:

    - Restricting control room access to critical staff
    - Staggering start times with specific routes
    - Installing temperature monitoring station
    - Implementing a facemask protocol
    - Temporarily closing administrative buildings
    - Increasing frequency of online training and virtual classes for employees
    - Providing employee family assistance and access to medical professionals using telehealth applications

9. A Bruce Power representative submitted that through the pandemic, Bruce Power had continued to produce and harvest approximately 70% of the world's supply of Cobalt-60. Also, Bruce Power had focused its efforts on supporting the communities as they respond to the challenges presented by COVID-19 by donating hand sanitizers, face masks, protective suits and plastic shields to the medical community. The Bruce Power representative added that Bruce Power had hosted a series of town halls and live events on social media, with municipal leaders and medical officers present, to convey vital information to residents.

10. An NB Power representative submitted that, as a result of emergency plans in place, frequent drills and exercises, and through the experience gained when working through severe acute respiratory syndrome (SARS), NB Power was well prepared to respond to COVID-19. The NB Power representative

further submitted that due to the prolonged duration of the pandemic, NB Power had learned some valuable lessons related to the maintenance of a robust supply chain, and the need for frequent communications with the community.

General Questions

11. The Commission asked staff and the licensee representatives to speak to whether there was an increased risk of cyber-security breaches because of the increasing number of electronic tools being deployed as a result of the pandemic. CNSC staff responded that instructions were provided as to what platforms were secured and not secured and that when CNSC staff were connected through the VPN, they were able to discuss information up to the Protected B level.[1]

12. An OPG representative responded that OPG ensured that there was a robust information technology (IT) security plan in place when directing staff to work from home and added that the security barriers in place were monitored on a daily basis throughout the pandemic.

13. A Bruce Power representative responded that Bruce Power had appropriate security measures for information protection on its network and that it was regularly communicated to staff not to send documents to their personal e-mail addresses as it may compromise security. The Bruce Power representative added that there had been an increase in attempts to circumvent Bruce Power's security systems and that Bruce Power was currently doing internal phishing campaigns to ensure that employees know what e-mails may be fraudulent.

14. An NB Power representative submitted that NB Power had a program in place for cyber security that included secure networks for transmission of protected information and awareness training for all staff. The NB Power representative further submitted that NB Power had in place, prior to the pandemic, a framework to prevent cyber security attacks and that the pandemic tested the system in place and allowed NB Power to make the necessary adjustments.
15. The Commission enquired as to whether there was an impact to the scheduled refurbishment project, the MCR Project or planned outages as a result of the pandemic. An OPG representative responded that OPG was able to complete the refurbishment of Darlington NGS Unit 2, which was now at full power and added

[1] Information where unauthorized disclosure could cause serious injury to an individual, organization or government. Examples include: medical information, information protected by solicitor-client or litigation privilege, and information received in confidence from other government departments and agencies.

that the refurbishment of Darlington NGS Unit 3 was delayed by approximately one month. The OPG representative further reported that the Pickering NGS Unit 1 outage was complete and that the unit was at 60% of full power and added that OPG completed its planned outages and a forced outage at Pickering without any safety concerns.

16. On the same topic, a Bruce Power representative responded that the MCR Project at Bruce NGS Unit 6 was delayed by approximately two months while the outage for Unit 5 was delayed by one month. The Bruce Power representative added that since early June 2020, Bruce Power had resumed some critical path work, which includes the installation of bulkhead and draining and drying of the heat transport system, and added that Bruce Power was to be back at full capacity by the end of June 2020.

17. Further, an NB Power representative submitted that refurbishment was not a concern for NB Power as it had been completed in 2012 and added that there was a planned outage scheduled for April 10, 2020, which was deferred to September 4, 2020 based on the safety requirements of the outage. The NB Power representative further submitted that the execution of the outage will be different due to new protocols but NB Power had determined that the outage could be carried out safely.

18. The Commission enquired as to whether the licensees have received any work refusals related to inadequate controls in place since the pandemic started. An OPG representative responded that there had been no work refusals since the pandemic started but there had been anxiety concerning the spread of the COVID-19 virus in the workplace. The OPG representative further responded that workers had, in some cases, requested that the Ministry of Labour be called to confirm that the protocols were adequate and added that the Ministry had confirmed that OPG had in place adequate controls to keep workers safe at all three facilities.

19. A Bruce Power representative submitted that although there were no work refusals to date, there were worker concerns at the beginning of the pandemic, particularly in areas of common touch points such as the biometric security entrance. The Bruce Power representative elaborated that, because such measures were required for the security of the facility, Bruce Power had put in compensatory measures such as compulsory hand sanitizer prior to passing the security entrance in addition to rigorous cleaning protocols of the biometric sensors.

20. An NB Power representative submitted that NB Power had not received any work refusals to date and confirmed that, similar to OPG and Bruce Power, there have been concerns raised by workers related to the protocols in place. The NB Power representative added that all workers' concerns were addressed to ensure that work was done safely while maintaining the physical distancing requirements.

21. The Commission enquired as to whether it can anticipate receiving requests from NPP licensees for exemptions or deviations from the Commission accepted licensing basis because of the current pandemic. CNSC staff responded that due to reduced training capabilities at the licensees' facilities, there was a request for an extension of the certification period for certified workers whose certification was scheduled to end in the second half of 2020, and added that the licensees were now starting to resume the simulator-based training. An OPG representative responded that at the beginning of the pandemic, OPG, in collaboration with NB Power and Bruce Power, identified areas that may require a regulatory exemption from the Commission and added that none of them were brought to the Commission, with the exception of the request for extensions to the certification periods.[2]

22. The Commission asked whether there was an impact on the licensees' supply chain as a result of the pandemic. An OPG representative responded that OPG was working very closely with suppliers to ensure that there were no disruptions in the maintenance of NPPs and that OPG had the required approvals to import parts from U.S facilities. The OPG representative further submitted that OPG did not see any issues regarding the availability of parts required for the maintenance of its NPPs.

23. A Bruce Power representative submitted that Bruce Power had meetings with its suppliers to establish what services were deemed "essential" and that there had been no impact on the supply chain for parts required for the maintenance of its nuclear reactors. The Bruce Power representative added that the biggest difficulty in the supply chain was acquiring sanitizing equipment in sufficient quantity.

Update on the Potassium Iodide Pill Working Group

24. CMD 20-M10 also provided information and an update regarding the Potassium Iodide Pill Working Group (KI Working

[2] Record of Decision - Bruce Power, Ontario Power Generation and New Brunswick Power - Applications to amend four Nuclear Power Reactor Operating Licences to reference REGDOC-2.2.3, *Personnel Certification, Volume III: Certification of Persons Working at Nuclear Power Plant*

Group), which was a commitment that was made by CNSC staff during the June 2018 hearing for the licence renewal for the Pickering NGS.[3] CNSC staff provided the following updates:

- Due to the current COVID-19 pandemic, CNSC staff have postponed seeking its concurrence on the draft Phase 1 report as the public health unit representative and municipal emergency management coordinators are supporting Ontario's pandemic response.

25. The Commission requested an update of the KI pill working group's progress and when the Phase I report will be available for public review. CNSC staff responded that due to public health agencies being busy in responding to COVID-19, it was decided amongst co-chairs from OPG, the Ministry of Health and the Office of the Fire Marshal and Emergency Management that the next step should be delayed. CNSC staff further reported that there would be a teleconference with all members of the working group to discuss the next milestones and set a plan of action.

STATUS REPORT ON NUCLEAR FUEL FACILITIES

26. With reference to CMD 20-M16, which includes the Status Report on Nuclear Fuel Facilities provided in the context of the current pandemic situation, CNSC staff presented the following updates:

- All nuclear fuel cycle facilities have implemented their respective business continuity plans (BCPs) in response to the COVID-19 pandemic.
- CNSC continues to provide regulatory oversight while following public health directives and guidelines.
- There have been no safety significant events to report and CNSC staff has confirmed that the licensees have taken precautions necessary for the health and safety of workers.

Comments from Industry Representatives

27. A Cameco representative submitted that Cameco had been monitoring the COVID-19 situation actively and that as of March 2, 2020, Cameco initiated a staged shutdown of its facilities, and implemented the following measures:

[3] CNSC Record of Decision – Ontario Power Generation Inc., *Application to Renew the Nuclear Power Reactor Operating Licence for the Pickering Nuclear Generating Station*, published December 2018.

- Increased number of hand sanitization stations and cleaning frequency.
- Implemented site access and screening protocols including taking temperatures, suspending non-essential work by contractors, staggered lunch breaks to better follow social distancing guidelines, and suspended all large group training.
- Asked staff to work from home where possible.
- Use of respiratory protection and appropriate personal protective equipment where physical distancing is not possible.

28. A Canadian Nuclear Laboratories (CNL) representative reported that, to minimize the risk of transmission of COVID-19 to workers, CNL reduced its operations across all sites on March 18, 2020, and added that there have been no confirmed or presumptive cases at any of its sites across Canada. The CNL representative further reported that during reduced operations, approximately 300 employees continue to work on-site to ensure that regulatory requirements are met, while approximately 2,000 employees work from home. The CNL representative added that CNL is working with an independent epidemiological firm in the development of a five-phase process to move from reduced operations to post-pandemic regular operations.

29. An SRB Technologies (SRBT) representative submitted that SRBT implemented a number of measures to protect workers while meeting obligations to provide emergency and safety lighting to essential businesses. The SRBT representative added that the measures taken to ensure that workers are protected include:

    - Increased number of hand sanitization stations and cleaning frequency.
    - Implemented a policy requiring staff returning from outside of Canada to stay home for a period of 21 days.
    - Required staff exhibiting symptoms to stay home for a period of 14 days.
    - Increased operations from 12 hours a day to 24 hours a day to reduce number of workers present during a given shift.
    - Reduced number of staff in any work area or common area to five.
    - Implementation of various measures to limit number of staff present on-site including: working from home; working alternate days; and working on-site for half-days.

30. An OPG representative submitted that OPG had taken the same unified approach for the Western Waste Management Facility (WWMF) and the NPPs.

31. A McMaster University representative submitted that McMaster University had implemented its BCP and continued essential operations with no impact to safety. The McMaster University representative further submitted that there had been no impact to the radiopharmaceutical production of Iodine-125, for which McMaster University is the sole supplier globally.

32. A BWX Technologies (BWXT) representative submitted the measures BWXT had taken since mid-March in response to the spread of the COVID-19 virus:

- Working with vendors to ensure there was no disruption in the supply chain including limiting suppliers and vendors to services deemed essential.
- Increased number of hand sanitization stations and cleaning frequency.
- Implemented policy requiring non-essential workers to work from home.
- Splitting shifts to reduce population density at any given time.
- Staggered shift start and end times to avoid congestions at entrances and exits.
- Limiting hallway traffic to one-direction in larger facility hallways.

General Questions

33. With respect to the virtual inspection conducted by CNSC staff as stated in CMD 20-M16, the Commission requested details about what the inspection entailed, how it was carried out, and the validity of the findings. CNSC staff responded that the aforementioned inspection was an inspection focused on radiation protection at a uranium mine site performed after CNSC staff evaluated that the inspection could, in fact, be conducted remotely. CNSC staff further submitted that the list of documents that CNSC staff needed to review was provided to the licensee to ensure the documents were readily available at the time of the inspection. CNSC staff added that upon completion of the inspection, CNSC inspectors stated that the remote inspection met the requirements of a normal CNSC inspection and did provide effective oversight.

34. With respect to the facilities in a staged shutdown state, the Commission asked whether there was any impact to the physical security programs at these facilities. With respect to Cameco and Orano, CNSC staff submitted that the licensees informed the CNSC at the beginning of the pandemic that they would be implementing a staged shutdown at their respective sites and added that, since then, both Cameco and Orano have achieved a full shutdown state. CNSC staff further submitted that a certain number of workers were required on-site during full shutdown state to make sure regulatory requirements were met, including physical security.

35. A Cameco representative submitted that the number of security personnel on site had not changed as Cameco entered a state of care and maintenance. The Cameco representative further submitted that the remote location of its sites increased the overall effectiveness of Cameco's physical security program as it takes into account the inaccessibility of the sites.

36. Further on that topic, with respect to CNL, CNSC staff responded that since the early stages of the pandemic, CNSC staff was in communication with the Chief Regulatory Officer at CNL to ensure that there was no compromise to physical security requirements even though all operations had ceased.

EVENT INITIAL REPORT (EIR)

Alberta Health Services: Exposure above regulatory limit of Nuclear Energy Worker

37. With reference to CMD 20-M17, CNSC staff presented information regarding an event that involved a radiological dose to an individual exceeding the regulatory dose limit[4]. CNSC staff submitted that on November 27, 2019, the Radiation Safety Officer at Alberta Health Services notified the CNSC that a nuclear medicine technologist was reported to have exceeded the regulatory limits based on the dosimeter results from the third quarter of 2019. The dosimeter readings were:
    - Body: 56.91 millisievert (mSv).
    - Lens: 174.9 mSv.
    - Shallow: 334 mSv photon

38. CNSC staff reported that the licensee launched an investigation as to the possible causes for the high doses reported which included requesting the dosimetry service provider to re-read the

[4] The effective dose limit is 50 mSv in a one-year dosimetry period for a nuclear energy worker, SOR/2000-203, subsection 13(1)

dosimeter, looking into work practices events near the recording period and historical dose reports. CNSC staff submitted that although no specific cause was identified as a result of the investigation, the most probable cause was localized contamination on the dosimeter. CNSC staff added that the licensee's most probable cause scenario was supported by the dosimeter results provided by the lab and the dose reconstruction calculation which had been reviewed by CNSC staff.

39. The Commission noted the uncertain cause for the dosimeter reading and enquired as to whether there was any periodic health monitoring planned. An Alberta Health Services representative reported that there was no health monitoring planned for the technician as no health effects were anticipated.

40. The Commission asked what the health impacts would be in the event the dose received by the technician was the dose measured by the dosimeter. CNSC staff responded that it would not expect to see any health effects as a consequence of a shallow dose as it is well below the threshold for a response and added that, with respect to the whole body dose, any health effects would not be perceivable in relation to the normal incidences of cancers.

41. The Commission asked if Alberta Health Services would be requesting a dose change to the National Dose Registry. An Alberta Health Services responded that it could request a dose change but had not as there was no conclusive evidence to state that the dose was non-personal.

42. The Commission asked CNSC staff about its expectations of the licensee in the current circumstance given that the official dose records are used for scientific studies. CNSC staff responded that its recommendation was for the licensee to pursue a dose change request as there is evidence to support a non-personal dose and that, because of the uncertain cause of this event, it would be up to the licensee and the worker to provide an alternate dose with supporting documentation. The Commission noted the importance of the National Dose Registry maintaining accurate dose results and requested that the readings be corrected.

43. The Commission asked if CNSC staff was satisfied with the licensee's conclusion that the dosimeter reading was a non-personal dose. CNSC staff responded that based on the licensee's operations in comparison with previous years and the technician's work patterns in comparison with other technologists in rotation, CNSC staff were satisfied that the dosimeter reading was a non-personal dose.

44. The Commission noted the number of dose exceedances without a certain cause reported in the last two years, and enquired as to what processes CNSC staff have in place for investigating dose exceedances without a root-cause and how it is determined whether it is safe to authorize a "return to work" for a worker. CNSC staff responded that if there was evidence that suggested that a regulatory dose had been exceeded, the licensee was required to remove the worker from any activity that can add to the dose, conduct an investigation, identify corrective actions to prevent reoccurrence and implement the safety measures. CNSC staff added that once the licensee has taken the necessary steps and CNSC staff was satisfied with the measures taken, CNSC would recommend a return to work authorization to the Designated Officer.

45. CNSC staff submitted that in terms of compliance and oversight, such events are one of the tools used to measure a licensee's performance in a certain area and that the CNSC takes such performance indicators into consideration when developing annual compliance plans respecting that licensee.

46. The Commission enquired as to whether the impacted worker's thyroid monitoring showed any evidence of Iodine-131 (I-131) exposure. CNSC staff responded that there was no evidence to point to thyroid uptakes. An Alberta Health Services representative responded that the technologist carried out five I-131 hyperthyroid therapies during the third quarter and added that there were no issues reported with the therapies or the patients.

47. The Commission noted that the event took place in November 2019 and requested clarification with respect to the delay in notifying the Commission. CNSC staff responded that the notification to the Commission was anticipated to be in late January but due to ongoing investigations and internal discussions, it was not possible to address during the March 2020 Commission Meeting.

INFORMATION ITEMS

January 12, 2020 false alert by Emergency Management Ontario concerning the Pickering Nuclear Generating Station

48. With reference to CMD 20-M11.1, Emergency Management Ontario (EMO) presented an overview of the January 12, 2020 false alert reporting an incident at the Pickering Nuclear Generating Station (NGS). EMO also presented an overview of

Alert Ready,[5] Canada's emergency alerting process, key findings from the false alert investigation,[6] and the corrective actions from the province's action plan.

49. EMO reported to the Commission that the key findings from the investigation were:

- The alert was a result of human error and was intended to be a test alert on the Alert Ready Training Site.
- On January 12, 2020, a duty officer logged in to the Alert Ready live site, and believing it was in the training site, accidentally sent a live alert.
- The intended test alert used a prepopulated nuclear bulletin reporting an incident at the Pickering Nuclear Generating Station.
- The DO was not acting on any information concerning a nuclear incident.
- The DO immediately recognized the error and proceeded to seek guidance on corrective action from supervisors.
- A new message was developed to communicate that the initial message was sent in error and that there was no nuclear incident.
- The investigation concluded that, while the immediate cause was human error, there were several other issues that contributed to both the error alert and the delay in issuing a cancellation, and identified a number of areas for improvement.

50. With reference to CMD 20-M11, CNSC staff presented its perspective on the January 12, 2020 false alert. CNSC staff gave an overview of the timeline of events as well as the lessons learned and actions taken by CNSC staff.

51. The Commission noted that EMO's audits and exercises failed to identify basic gaps in its process and asked for information about how EMO planned to identify such gaps. The EMO representative reported that EMO's action plan was publicly available and that EMO recognized the opportunities to improve its processes and internal procedures to reduce and eliminate human errors. The EMO representative added that EMO was working with the National Alert Aggregation and Dissemination (NAAD) Governance Council to implement automated solutions to avoid scenarios related to human error alerts.

[5] Alert Ready is a public-private partnership between the Federal, Provincial, Territorial (FPT) governments, broadcasting and telecommunication industries and Pelmorex Weather Networks Incorporated (Pelmorex).
[6] Commission Member Document CMD 20-M11.A, *Global Public Affairs Independent Review of the Canadian Nuclear Safety Commission's Response to the January 12, 2020 Pickering False Alarm and CNSC Management Response*, June 2020.

52. Concerning the time that it took EMO to correct the false alert, the Commission enquired about EMO's decision-making process. The EMO representative explained that EMO's internal decision-making processes, which led to the delay between the initial alert and the clarifying notification, were documented in the independent investigator's report that is available online. The EMO representative added that EMO took actions such as clarifying roles and responsibilities with Alert Ready partners and that EMO strived to ensure timely decision-making.

53. Given the public perception of nuclear incidents, the Commission asked whether any extra level of verification were required before issuing a nuclear alert. The EMO representative informed that the procedures for nuclear alerts were outlined in the Ontario *Provincial Nuclear Emergency Response Plan*[7] and that EMO made internal improvements to its testing procedures, such as a two-step authorization or review process before sending out an alert.

54. Asked whether the wording for the nuclear false alert had been or could be reviewed by CNSC staff, the EMO representative reported that there had been no review of the alert message by CNSC staff before its publication. The EMO representative explained that the initial alert came from a template message as opposed to the clarifying notification that was customized. The EMO representative added that provincial, municipal and facility stakeholders have reviewed the template messages. The EMO representative further added that, as part of EMO's action plan, EMO would create a template message to clarify rapidly if an alert was sent in error.

55. The Commission asked the Municipality of Clarington's mayor for his perspective on the false alert and its effects on its community. The mayor indicated that he was aware that it was a false alert within 10 minutes, but that the Municipality's Communications staff felt frustrated not to have the ability to disclose the information. The mayor added that information should be communicated directly to stakeholders, for them to have the ability to respond to inquiries and expressed its opinion that Pelmorex, the system operator authorized to broadcast emergency alerts across Canada, should not have the ability to delay clarifying false alerts, given the social anxiety resulting from nuclear emergencies. The mayor also gave the perspective of the Canadian Association of Nuclear Host Communities, that

[7] https://www.emergencymanagementontario.ca/english/emcommunity/response_resources/plans/provincial_nuclear_emergency_response_plan.html

a nuclear incident anywhere would impact any host community around the world.

56. The Commission asked the Municipality of Pickering's representative for his perspective on the false alert and its effects on its community. The acting Deputy Mayor for the Municipality of Pickering indicated that the City of Pickering fire chief was able to confirm shortly after the incident that it was a false alarm and expressed its concerns about the lack of public and official response for 108 minutes. The acting Deputy Mayor added that he was confident about OPG's and the Ontario provincial government's ability to protect public safety, but that a faster response to clarify a false alert was needed to reduce anxiety in the community.

57. The Commission asked whether the City of Pickering's web site had a notification indicating that it was a false alert before the province issued the correction. The Deputy Mayor for the Municipality of Pickering responded that he believes that the Municipality of Pickering issued some type of notification through its social media before the official public notification by EMO.

58. The Commission asked CNSC staff for the impact the false alert had on the public. CNSC staff reported that it did not observe a wave of panic from the public but rather confusion and that the tone of the social media was predominantly frustration instead of fear. CNSC staff added that it responded to several media calls and was able to confirm that the alert was false and added that the public was also seeking answers from the Government of Ontario and from OPG.

59. Asked about the false alarm impact on the public the OPG representative informed that its "Prepare to be Safe" web site, running since 2015, normally received an average of 12,000 orders of KI pills per year, and that the demand had a surge in requests of about 60,000 KI pills within a few weeks of the false alert. The OPG representative added that OPG was aiming to have all of those orders filled by the first week of July.

60. Asked about its communications with the community following the false alert, the OPG representative stated that OPG was able to provide reassurances to members of the public visiting its information centre, calling or seeking answers to questions on social media. The OPG representative added that the event reaffirmed the importance of establishing strong, ongoing relationships with the community stakeholders, Indigenous communities and the public at large.

61. In relation to roles and responsibilities of Alert Ready partners concerning nuclear emergencies, the Commission enquired whether OPG had been restricted from publicly clarifying the false alert sooner. The OPG representative indicated that it was not satisfied with the time it took for the clarification to be issued on OPG's website and that OPG needed to improve its communications in such a scenario. The OPG representative added that OPG had been in contact with the EMO within minutes of the false alert, confirmed that it was an error, and requested a retraction. The OPG representative added that OPG felt that, as an organization, there was a need to clarify the situation on its website.

62. Further on the response time expected to issue a correction for a false alert, CNSC staff reported to the Commission that the response time for communication, agreed within the international community, should be less than 30 minutes.

63. The Commission enquired whether it was possible for EMO to introduce a delay in the emergency messaging system to allow for a retraction in case of a human error. The EMO representative confirmed that, with the actual system, once a message was loaded up, it was nearly instantaneously distributed. The EMO representative added that it was not aware of any discussions to include a delay in the emergency messaging system. The EMO representative added that a deliberate delay could be counterintuitive to the urgency to get information to the public.

64. The Commission enquired about the New Brunswick Emergency Measures Organization's perspective on the January 12, 2020 false alert event. The New Brunswick Emergency Measures Organization representative described the differences between the New Brunswick and Ontario systems, such as a double authentication from senior officials before issuing an alert message. The New Brunswick Emergency Measures Organization representative added that the New Brunswick system also had a requirement to review and validate the intent of the alert before it was sent and that New Brunswick's Alert Ready interface had a separate training side and a live side.

65. The Commission noted CNSC staff's statement about the need to ensure a coordinated government response for all potential scenarios and enquired about the characteristics required to adapt to any unrehearsed scenarios. The EMO representative explained that the false alert was a learning opportunity to improve on EMO's response process, particularly on the communication side. The EMO representative further explained that future EMO exercises would include critical thinking aspects. The EMO

representative added that EMO would also introduce critical thinking aspects in its recruitment process. In relation to a coordinated government response, the EMO representative stated that it was not aware of any engagement specifically with CNSC on coordinating the government response.

66. Further on the need to train unrehearsed scenarios, CNSC staff reported that its training scenarios were designed to encourage employees to be flexible, responsive and decisive, to be able to move quickly and to make decisions and that CNSC staff was continuously looking for new ideas and various scenarios. CNSC staff added that it was important to know who the stakeholders were and work with them to remove barriers and capitalize on each other's capability. CNSC staff further added that the Federal/ Provincial/ Territorial Nuclear Emergency Management Committee could be used for discussion on coordinating the government response.

67. The Commission gave the floor to the OPG representative who wanted to acknowledge the Region of Durham and the City of Toronto and their Emergency Management Offices for their work during the false alert event. The OPG representative stated that both were significantly impacted in actively responding to their communities.

68. In his concluding remarks, the EMO representative stated that, as a citizen of Ontario, he could imagine the impact of and the magnitude of a false alert and stated that EMO staff took their responsibilities very seriously. The EMO representative added that the false alert was an unfortunate event but also a great opportunity to learn and identify gaps to improve the EMO and the Emergency Management community.

69. CNSC staff also confirmed that the false alert created a lot of angst in the public, but it also provided a learning opportunity. CNSC staff added that it wanted to continue to improve its responsiveness as well as maintaining the trust of the public as a source of information for factual and credible information.

70. The Commission noted that the report from the independent review of CNSC's response[8] raised concerns related to CNSC staff communications between senior and middle management and about the partial activation of the CNSC Emergency Operations Centre. Asked for comments on the observations from the independent review report, CNSC staff stated that the partial activation of the Emergency Operations Centre was part

[8] Commission Member Document CMD 20-M11.A, *Global Public Affairs Independent Review of the Canadian Nuclear Safety Commission's Response to the January 12, 2020 Pickering False Alarm and CNSC Management Response*, June 2020.

of its Standing Emergency Plan and used to monitor events that were not a full emergency, but had the potential to develop into one. CNSC staff added that this was the first time partial activation was triggered and that CNSC staff realized that its procedures were not fully covering the roles and responsibilities in the situation of a false alert. CNSC staff further submitted that the procedures have now been updated to clarify the chain of command so that decisions can be taken more rapidly by the designated CNSC emergency officials.

2019 Integrated Regulatory Review Service (IRRS) Mission

71. With reference to CMD 20-M9, CNSC staff presented an overview of the 2019 IRRS Mission to Canada and Canada's response. CNSC staff reported that the IRRS Mission was a review service led by the International Atomic Energy Agency (IAEA), comprised of experts from IAEA Member States' regulatory bodies.

72. CNSC staff submitted that Canada had made a commitment as a Contracting Party to the Convention of Nuclear Safety, following the Fukushima accident, to host an IRRS Mission once every ten years. CNSC staff further submitted that the first IRRS Mission to Canada had taken place in 2009, with a follow-up mission in 2011 to assess Canada's progress in addressing the 2009 findings, the CNSC's response to the Fukushima Daiichi event, and to review the *Packaging and Transport of Nuclear Substances Regulations*.[9]

73. The Commission asked if the IAEA ranked countries against each other and whether the reports were centrally located. CNSC staff responded that the IAEA does not rank countries but benchmarked countries against IAEA safety standards and added that the IAEA published its reports on its website.

74. The Commission enquired as to how the CNSC determined whether it had improved its regulatory framework from one mission to another without a quantifiable report. CNSC staff reported that the IAEA had chosen to not provide ratings in order to encourage its Member States to partake in an IRRS mission and added that the follow-up mission, which takes place a few years after the mission, will be to report on any action items to which Canada had agreed.

75. The Commission enquired as to whether the IAEA was considering quantifying the findings of its missions such that a

[9] SOR/2015-145

Member state would receive an overall rating for its regulatory framework. CNSC staff submitted that Canada had on a number of occasions expressed its support for such an approach. CNSC staff further submitted that the IAEA had chosen to leave it to the Member States to review the suggested recommendations and good practices and to adopt them as part of their regulatory framework.

76. Asked if the Canadian Guide on Medical Management of Radiation Emergencies was part of the review, a Health Canada representative responded that the guide in question was not part of the review, as Health Canada contributed in the area of existing exposures focusing on issues such as radon and management of natural radioactivity. The Health Canada representative added that although it was not part of the IRRS Mission, it was referenced in the discussion around the Emergency Preparedness Review (EPREV) Mission.

77. The Commission noted that the IRRS Mission team consisted of 24 experts from 17 different Member states and enquired whether the experts' own culture and their understanding of Canada's governance structure shaped the final report. CNSC staff responded that as part of the advance reference material provided to the IRRS Mission team, information regarding Canada's governance structure and legal framework was provided to give context as to how the Government of Canada operated and added that the reviewers can request additional information when conducting interviews. CNSC staff added that there was a possibility that certain cultural elements may impact the final suggestions or recommendations but there was always a discussion between the review team and the host country with respect to the final findings and that it was the host country's decision as to whether they would accept them or not.

78. The Commission asked for further information regarding the IRRS Mission's first recommendation to enhance Natural Resources Canada's (NRCan) policy on Radioactive Waste Management and what steps NRCan was taking to close this action. An NRCan representative reported that NRCan was currently in the planning stages for responding to this action and had begun conducting a gap analysis in relation to the applicable IAEA safety standards. The NRCan representative further reported that an engagement plan was currently being developed to seek input from Canadians and stakeholders and added that public engagement should commence in the fall of 2020.

June 2019 International Atomic Energy Agency (IAEA) Emergency Preparedness Review (EPREV) Mission to Canada – Mission Findings and Canada's Response

79. With reference to CMD 20-M14, CNSC staff presented an overview of the 2019 IAEA EPREV Mission (the Mission) to Canada and Canada's response to the Mission report and the associated action plan. CNSC staff reported that the IAEA EPREV was a review service led by the IAEA comprised of international experts, to measure a host state's capacity to prepare and respond to a nuclear emergency against the requirements of the IAEA *General Safety Regulations Part 7: Preparedness and Response for a Nuclear or Radiological Emergency.*[10]

80. CNSC staff submitted that Canada's initial self-assessment was submitted to the IAEA in January 2018 and that the IAEA accepted Canada's invitation to conduct a review in February 2018. CNSC staff further submitted that following the acceptance of the invitation, a meeting was held with the EPREV team leader, the IAEA, and Canadian stakeholders to agree upon the Mission objectives, scope, terms of references and dates.

81. The Commission enquired as to whether the conclusions of the Mission would have been different if it had taken place after the Emergency Management Ontario (EMO) false alert issued on January 12, 2020. CNSC staff responded that because the Mission focussed on whether Canada met the requirements of the *IAEA General Safety Requirements Part 7*, the results of the Mission would not have been different.

82. Further on that topic, the Commission enquired as to whether the follow-up mission would take into account the EMO false alert. CNSC staff responded that because the follow-up mission will be based on whether Canada had adequately addressed the recommendations of the Mission, the EMO false alert is not likely to come up as part of the results of the follow-up mission.

83. The Commission requested information on the process taken by Canada to verify and validate that all recommendations would be implemented in a satisfactory manner. A Health Canada representative responded that Canada's EPREV Steering Committee, consisting of senior officials from various government levels and NPP operators, met on a bi-annual basis to discuss the progress of the detailed action plan and added that each organization also had their own implementation plan which

[10] IAEA Safety Standards, *General Safety Requirements No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency*, International Atomic Energy Agency, 2015

was integrated into their operation plans. The Health Canada representative further stated that the decision on whether a recommendation had been implemented satisfactorily was of the Steering Committee and added that the annual summary update to the IAEA provides validation that the progress for the action plan had been adequate.

84. The Commission asked when Canada anticipated the follow-up mission to be and whether Canada would have, by then, implemented all the recommendations. CNSC staff responded that the follow-up mission was to take place once Canada had implemented all the actions, probably in 2023-2024.

85. The Commission asked for further information regarding the suggestion made by the EPREV team with respect to the medical management of radiological emergencies. A Health Canada representative responded that the particular suggestion related to the province of Ontario not having a documented listed of designated medical experts in case of a radiation emergency. The Health Canada representative further added that the suggestion was administrative in nature as it was not a matter of the province not having the capacity, but rather not having a list of the designated individuals. CNSC staff submitted that this was a suggestion and not a recommendation as Canada was aligned to the IAEA *General Safety Requirements* Part 2 Article 7. CNSC staff further submitted that this would require minor adjustments in the administrative documentation process.

86. The Commission asked whether the IAEA maintained a global repository with past incidents and event reports to help identify best practices related to emergency preparedness. CNSC staff responded that there was an international group of experts that comes together to share lessons learned and develop standards which are then implemented by Member states. CNSC staff added that CNSC staff's advanced preparation material, which was submitted to the IAEA prior to the Mission, was posted on the IAEA website to assist Member states who would like to take part in an EPREV Mission.

87. A Health Canada representative submitted that the IAEA Secretariat produced a series of reports following significant events to capture the history of the events, the responses to the events and the lessons learned. The Health Canada representative further submitted that the experience and lessons learned from these events were discussed at an international level and taken into consideration during future updates of Safety Standards.

88. The Commission asked whether other countries had been encouraged to participate in an EPREV Mission given that

Canada was the first Group of 7 (G7) country to undergo such a review. A Health Canada representative responded that an observer from Japan was present as Japan was interested in hosting a future EPREV Mission. The Health Canada representative further submitted that since the Mission, Canada had participated in various IAEA-lead technical meetings and conferences and that many countries had been waiting for Canada to host this Mission to learn from its experiences.

Oral Presentation by the Independent Electricity System Operator (IESO)

89. With reference to CMD 20-M15, the Independent Electricity System Operator (IESO) presented an overview of the roles and duties of the IESO in Ontario, with a focus on the role of nuclear power in meeting Ontario's energy needs.

90. In relation to the Pickering NGS planned shutdown, the Commission enquired about the predominant constraint with regard to the supply capacity. The IESO representative reported that Ontario had some transmission limitations but that the primary gap was with regard to generation capacity. The IESO representative added that the NGS being offline, either for retirement or refurbishment, would create a gap. The IESO Annual Planning Outlook (APO) estimated a capacity gap of approximately 2,000 megawatts (MW) developing in 2023. The IESO representative added that the IESO was also currently looking at how the current pandemic affected NGS's refurbishment schedules.

91. The Commission enquired about the IESO's influence on infrastructure decision-making to manage future decades of energy needs. The IESO representative explained that its analysis identified future reliability needs that would require action. The IESO representative added that it was working collaboratively with all the stakeholders to get their perspectives and inputs on solutions, integrating that information, and giving policy advice to the Ontario government.

92. The Commission enquired about the effect of the Pickering NGS planned shutdown and the resulting reduction in nuclear baseload on the future reliability of the Ontario power system. The IESO representative reported that Ontario's nuclear fleet currently had a baseload generation of 13,000 MW and that it would be around 10,000 MW when Pickering NGS would shut down. The IESO representative added that the province had a very diverse energy resource mix, that it was also looking at implementing energy

storage, and that its staff was trained to be able to maintain a reliable system.

93. The Commission enquired whether IESO was considering capacity or energy when importing electricity for the province of Ontario. The IESO representative explained that capacity was the availability to provide energy, and that energy was the delivery of energy itself. The IESO representative further explained that Ontario currently imported energy to balance supply and demand every day. The IESO representative added that Ontario exported 20 terawatt hours last year from a 140-terawatt-hour system and imported six terawatt hours, depending on supply and demand and the hour of the day.

94. The Commission noted that the IESO's APO, which forecasts Ontario's electricity need for the next 20 years, was referring to possible further extension of the Pickering NGS and enquired about the likelihood of a life-extension request for the Pickering NGS and whether that information was shared between the IESO and the CNSC. The IESO representative explained that the APOs were an assessment representing what IESO believed would happen, but added that IESO would always be prepared for moving forward with plans and ensure reliability, whether Pickering NGS would be operating in 2025 or not. The IESO representative added that the IESO took its information from the asset owners based on what they expected to undertake. The IESO representative further submitted that IESO and CNSC staff could benefit from better engagement on planning and committed to increase the engagement between the two entities. The Commission is also of the view that CNSC staff should look for opportunities to better coordinate with the IESO to improve transparency and trust.

95. Asked whether OPG had any intention of operating the Pickering NGS past 2024, the OPG representative noted that OPG understood that a Commission decision was necessary to operate any Pickering NGS unit past 2024 and that OPG had a licence condition requiring it to inform the CNSC, in writing, of any intention of operating Pickering NGS units past 2024 by the end of 2022. The OPG representative also reported that OPG had approached the IESO on the APO and concluded that there would be value to the Ontario's electricity system to operate the Pickering NGS to the end of 2025, so long as the Pickering NGS units were safe to operate and OPG received regulatory approval from the Commission. The OPG representative added that the life extension of the Pickering NGS was fully dependent on the results of the required licensing application and decision from the Commission.

96. CNSC staff took the opportunity to explain that it was in discussions with OPG to ensure that the timelines for considering longer operation at Pickering were respected; CNSC staff noted they would be informing the Commission ahead of time of any proposed changes to OPG's licensing basis. CNSC staff will keep the Commission informed of OPG's intention through RORs or NPP status reports

97. The Commission asked about the IESO's upcoming interim APO, and whether it will indicate that the Pickering NGS units running post-2024 was an option. The IESO representative submitted that running the Pickering NGS units post-2024 was not currently indicated as an option.

DECISION ITEMS – REGULATORY DOCUMENTS

Suite of five Draft Regulatory Documents related to Waste Management and Decommissioning

98. With reference to CMD 20-M13.A, CNSC staff presented the following five draft regulatory documents (REGDOCs) to the Commission for consideration and approval during the public meeting of the Commission on June 18, 2020:

- REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization*
- REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*
- REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for the Disposal of Radioactive Waste, Version 2*
- REGDOC-2.11.2, *Decommissioning*
- REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*

99. Regulatory documents play a key role in the framework of nuclear regulation by the CNSC. They explain to licensees and applicants what they must achieve in order to meet the requirements set out in the NSCA and the regulations made under the NSCA. When included in the licensing basis, REGDOC requirements are mandatory and must be met by any licensee wishing to obtain (or renew) a licence or certificate to use nuclear substances or to operate a nuclear facility. Regulatory documents also provide more information about approaches used by CNSC staff to evaluate specific problems or data during the review of licence applications. Licensees are expected to review and consider this guidance; if these are not

being followed, the licensees should explain how the alternate approach they have chosen still meets regulatory requirements.

100. This suite of five REGDOCs sets out requirements and guidance for waste management and decommissioning activities for specific licensees and applicants. The purpose of the draft REGDOCs is to ensure that radioactive waste is safely managed and disposed; that decommissioning is planned and executed safely; and that a fund for decommissioning is established and maintained. The draft REGDOCs were developed by CNSC staff based on scientific information, taking into account international regulatory best practices and modern codes and standards, including the International Atomic Energy Agency's safety standards.

101. The draft REGDOCs underwent a significant consultation process during their development, including the publication of a discussion paper, DIS-16-03, *Radioactive Waste Management and Decommissioning* in 2016. This was followed by public consultation in 2018 and 2019, which included workshops with industry, interested members of the public and civil society organizations (CSOs). Following each phase of consultations, CNSC staff revised the REGDOCs, as appropriate, to address the feedback received. Additional workshops were held with stakeholders in February and April 2020 to review how comments obtained during the consultation activities had been dispositioned by CNSC staff.

Requests to postpone Commission's consideration of the Suite of five Draft Regulatory Documents related to Waste Management and Decommissioning and to intervene

102. On May 8, 2020, 12 stakeholders, including members of the public and CSOs that had participated in public consultations on the suite of five waste-related REGDOCs, sent a request to the Commission to remove this item from its agenda for the June 17–18, 2020 public meeting of the Commission. On May 15, 2020 and following the President's consideration of the request as a panel of the Commission for procedural issues, the President informed the stakeholders that the Commission would consider the five REGDOCs at the June 2020 Commission meeting.[11] The Commission provided reasons for this decision, including why it is important for the Commission to consider the proposed REGDOCs during that meeting rather than waiting for the development of the Government of Canada's policy for

[11] President Rumina Velshi to 12 stakeholders, *Re: Commission Approval of Waste Management and Decommissioning REGDOCs*, May 15, 2020.

radioactive waste, which falls under the mandate of Natural Resources Canada (NRCan) and not the CNSC. As stated by the Commission in its decision, the CNSC does not have authority over Canada's policy respecting radioactive waste, nor over the establishment of a national strategy in this regard – that authority belongs to NRCan, on behalf of Canada.

103. In response, ten stakeholders, all of whom had submitted the May 8, 2020 request, requested the opportunity to intervene in the June 2020 Commission meeting on this matter. On May 28, 2020 and following the President's consideration of the request as a panel of the Commission for procedural issues, the President, via the Commission Secretary, informed the ten stakeholders as well as two stakeholders who had submitted the May 8, 2020 request, that it would not permit interventions – in writing or orally – during the June 2020 Commission meeting.[12] Specifically, the Commission was "*… satisfied that the process that the CNSC followed to develop the five waste-related REGDOCs was rigorous, comprehensive and transparent, and gave many opportunities for interested persons to provide comments.*" In respect of procedural fairness considerations raised in the request, the Commission noted that the process of making and approving a REGDOC is not one to which the considerations of procedural fairness apply.

General Questions

104. The Commission provided CNSC staff with some general feedback to consider for future similar presentations considering a large volume of material.

105. The Commission expressed concerns about how some of the terminology used in the five REGDOCs may be interpreted. CNSC staff provided rationale for the terminology used in the REGDOCs, noting that one of the terms referred to by the Commission, "optimization," is defined in the International Atomic Energy Agency's (IAEA) glossary[13] and used throughout the IAEA's safety-related documents. The Commission was satisfied with CNSC staff's explanation and suggestion to add "optimization" into the CNSC's glossary, REGDOC-3.6, *Glossary of CNSC Terminology*.[14]

[12] Marc Leblanc, Commission Secretary, on behalf of President R. Velshi, to 12 stakeholders, *Subject: Commission Approval of Waste Management and Decommissioning REGDOCs*, May 29, 2020.
[13] International Atomic Energy Agency, *IAEA Safety Glossary, Terminology Used in Nuclear Safety and Radiation Protection*, 2018 Edition, IAEA, Vienna, 2019.
[14] CNSC Regulatory Document, REGDOC-3.6, *Glossary of CNSC Terminology*, last updated 2019.

106. With respect to how the term “practicable” is used in a regulatory environment, CNSC staff explained that, in considering a project, CNSC staff looked at the entirety of the project and its overall safety case, including justification assessment and mitigation measures, to determine if a proposed approach is practicable. CNSC staff further noted that this term is used by the IAEA as well. The Commission’s understanding of this term is that practicability considered a risk-benefit analysis.

107. The Commission expressed its satisfaction on the thoroughness of the consultation carried out by CNSC staff in regard to the five REGDOCs, noting that it was satisfied with how stakeholder comments were dispositioned. However, the Commission also noted that the concept that REGDOCs are ‘living documents’ did not appear to be adequately conveyed to the public. CNSC staff acknowledged that this point had been raised during the consultation process and confirmed that REGDOCs are evergreen. CNSC staff also noted that, in being evergreen, significant flexibility exists in reviewing and updating REGDOCs, as compared with regulations, since they are intended to provide applicants and licensees with guidance and information about requirements.

108. The Commission noted the expansive consultation conducted by CNSC staff in 2019 and 2020, acknowledging CNSC staff’s new strategy of providing stakeholders with an updated version of the REGDOCs for review prior to the workshops as a good practice. CNSC staff noted that such expansive consultation is not the usual practice across federal regulators and exemplifies the high level of consultation that CNSC staff has carried out in respect of the five REGDOCs.

109. Further in regard to the process followed by CNSC staff after the workshops, CNSC staff explained that the REGDOCs were further revised to address comments made prior to providing the REGDOCs to the Commission. CNSC staff acknowledged that, after the workshops, the participants were not provided with the final versions of the REGDOCs prior to them being provided to the Commission due to tight project timelines.

110. The Commission noted that the five REGDOCs did not appear to include information about overarching and high-level design objectives. In response, CNSC staff explained that information on the overarching framework for radioactive waste management, including governing legislation and associated roles and responsibilities, are detailed in REGDOC-2.11, *Framework for Radioactive Waste Management and*

Decommissioning in Canada,[15] which was previously published and not included in this suite of five waste-related REGDOCs presented to the Commission.

111. In regard to the Commission's enquiry about the apparent lack of prescription regarding design requirements in the five REGDOCs, CNSC staff explained that it was not necessary to prescribe the type of facility that a proponent proposes for radioactive waste storage or disposal. Rather, the proponent is required to justify its proposal by showing that the facility's proposed design meets regulatory requirements and other design criteria and limits. CNSC staff also provided an example about waste classification and how the CNSC applies performance-based regulation in this regard, noting that this type of regulation provides flexibility to applying new standards and equipment on an ongoing basis.

112. The Commission requested clarification regarding how CNSC staff differentiated between requirements and guidance in the five REGDOCs. CNSC staff reported that, in differentiating between the "shall" and "should" statements, CNSC staff ensured that the REGDOCs remained closely aligned with IAEA safety standards, CSA Group standards, as well as national and international best practices. CNSC staff noted that this issue was frequently discussed with stakeholders during the public consultations and that, in the final versions, CNSC staff ensured that the "shall" and "should" statements were consistent throughout the five REGDOCs.

113. Noting that an NRCan representative was participating in this Commission meeting item, the Commission requested information about NRCan's updating of Canada's *Radioactive Waste Policy Framework*, which was a recommendation resulting from the 2019 Integrated Regulatory Review Service (IRRS) mission to Canada.[16] The NRCan representative explained that NRCan was in the initial stages of this update to the policy framework and was developing a public engagement strategy. The NRCan representative provided the view that the CNSC's update to waste-related regulatory documents was a separate process from NRCan's update to the *Radioactive Waste Policy Framework* and that, should the Commission approve the REGDOCs, this would in no way constrain NRCan's update to Canada's *Radioactive Waste Policy Framework*. The NRCan representative further stated that, after the *Radioactive Waste Policy Framework* was updated, it could be applied to how

[15] CNSC Regulatory Document, REGDOC-2.11, *Framework for Radioactive Waste Management and Decommissioning in Canada*, 2019.
[16] Commission Member Document CMD 20-M9, *2019 Integrated Regulatory Review Service Mission to Canada*

CNSC regulates, including amendments to related CNSC REGDOCs.

114. The Commission noted its understanding that the REGDOCs are all evergreen and are designed to evolve with Canada's *Radioactive Waste Policy Framework.* The Commission is satisfied that it would be inappropriate to delay the implementation of the CNSC's waste and decommissioning regulatory documents.

Regulatory Document REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization*

115. The Commission, noting the complexity and multistage nature of a deep geological repository (DGR) project, enquired about why REGDOC-1.2.1 seemed to present DGR site characterization and design as a single task rather than in a staged approach. CNSC staff explained that, in respect of site characterization and selection, the CNSC does not have regulatory authority at that phase of a project and that any projects at this phase would be in a pre-licensing period. As such, REGDOC-1.2.1 provides the elements of a site characterization program, with the understanding that in the pre-licensing phases, the design may evolve over time. CNSC staff further stated that the way site characterization would be incorporated in the design requirements for a DGR is provided for in REGDOC-2.11.1, Volume III which details the safety case for long-term radioactive waste management.

116. A Commission member expressed the view that, even after considering the information provided by CNSC staff, REGDOC-1.2.1 did not appear to be consistent with the other four REGDOCs in respect of the detail for how site characterization would be managed and how uncertainties would be reduced over time. CNSC staff responded that the focus of REGDOC-1.2.1 was to capture site characterization data and that other REGDOCs provided specifications for other aspects of a project, such as environmental monitoring, that had to be considered in a facility's design. CNSC staff further explained that REGDOC-1.2.1 had been developed to align with the IAEA's SSG-23, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*.[17]

[17] International Atomic Energy Agency, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*, IAEA Safety Standards Series No. SSG-23, IAEA, Vienna (2012).

117. Asked about why this REGDOC included strictly guidance versus the requirements included in the other four proposed REGDOCs, CNSC staff explained that REGDOC-1.2.1 was different in this respect due to the pre-licensing nature of the site characterization phase. CNSC staff noted that the regulator's early involvement in a project will help guide a project proponent during the pre-licensing phases and ensure that the proponent understands future licensing requirements, including those found in REGDOC-2.11.1, Volume III. CNSC staff further stated that, when a proponent is at the stage of submitting a licence application, the *Class I Nuclear Facilities Regulations*[18] provide for site characterization requirements that applicants are required to meet.

118. The Commission enquired about whether REGDOC-1.2.1 had been drafted to be project specific. CNSC staff responded that REGDOCs are not project specific and are drafted with a focus on safety, the CNSC's expectations and requirements, and to provide guidance. CNSC staff also provided an example of how REGDOC-1.2.1 could be applied in respect of a particular proposed project.

119. The Commission, noting that REGDOC-1.2.1 was intended to supersede R-72, *Geological Considerations in Siting a Repository for Underground Disposal of High-Level Radioactive Waste,*[19] enquired whether the detailed information and requirements in R-72 had been eliminated from the CNSC's regulatory framework. CNSC staff explained that the information previously included in R-72 can now be found in REGDOC-2.11.1, Volume III.

120. Recognizing the potentially long lifespan of a DGR, the Commission enquired about how potential future failures and aspects such as climate change are addressed in CNSC staff's site characterization guidance. CNSC staff explained that DGRs were planned on the basis of a lifespan of one million years and that this long lifespan, as well as considerations such as catastrophic failures and disruptive events, would be considered in the context of a proponent's safety case for a proposed DGR, which is detailed in REGDOC-2.11.1, Volume III. CNSC staff also provided details about the evidence that a proponent would need to submit to ascertain that the site characterization timelines meet the requirements provided for by REGDOC-2.11.1, Volume III.

[18] SOR/2000-204
[19] Atomic Energy Control Board Regulatory Guide, *Geological Considerations in Siting a Repository for Underground Disposal of High-Level Radioactive Waste*, 1987.

121. Asked about how cumulative effects would be considered in respect of a DGR project, CNSC staff explained that REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*, version 1.1 addressed how the cumulative effects of a proposed radioactive waste disposal project would be considered.

122. The Commission noted that REGDOC-1.2.1 only covers site characterization, not site selection, and enquired about how the design process would be managed should unsuitable characteristics at the site be found following site selection. CNSC staff acknowledged that, following site characterization for a DGR, the discovery of unsuitable features during site preparation could occur. CNSC staff provided the example of the ONKALO facility in Finland, in which a water-conducting fracture zone was discovered following site selection and the proponent was required to make design changes and re-establish its safety case for the facility. CNSC staff explained that such a process would be required of a Canadian proponent as well, that the continuous updating of the safety case as a project evolves is covered by the CNSC's regulatory framework, and that if the safety case could not be met, a project would not have CNSC authorization to continue.

Decision on REGDOC-1.2.1

123. After deliberation, the Commission approves REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization* for publication and use, subject to editing directed below. **DECISION**

124. The Commission notes that REGDOC-1.2.1 did not include the same level of granularity as the other four waste-related REGDOCs presented for approval, and also noted that some of the language used in the other four waste-related REGDOCs was not used in REGDOC-1.2.1.

125. The Commission therefore directs CNSC staff to edit REGDOC-1.2.1 for language and style to be more consistent with the four other waste-related REGDOCs presented for approval. The Commission need not see the language and style edits, as they are not substantive, and approves the REGDOC for publication and use, once the edits are made.

126. The Commission also expects that, in future versions of this REGDOC, CNSC staff will increase the granularity of the guidance that is provided.

Regulatory Document REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*

127. The Commission noted that REGDOC-2.11.1, Volume I was more prescriptive than REGDOC-1.2.1, and that such prescription was appropriate for a REGDOC considering this subject matter.

128. The Commission enquired about the process that licensees would follow in order to establish and document a facility's operational limits and conditions as derived from safety assessments and as specified in REGDOC-2.11.1, Volume I. CNSC staff explained that operational limits and conditions were considered in a facility's safety case through an iterative process during construction. CNSC staff also explained that, through this process, the design requirements of a facility would be compared to the as-built facility.

129. The Commission invited staff to explain the characterization of low-level radioactive waste (LLRW) and how predominant radionuclides were identified. CNSC staff explained that the preferred LLRW characterization method includes the measurement of isotopes within the waste via gamma spectrometry or liquid scintillation counting. CNSC staff also stated that these characterization methods were most useful for radionuclides with short half-lives, such as those used in a medical setting, and that for longer-lived radionuclides, knowledge of the source of the LLRW was important in determining the predominant radionuclides.

130. The Commission requested clarification in respect to how radioactive waste is differentiated from the storage of nuclear substances, and noted the broad nature of the term "potential use". CNSC staff responded that all nuclear substances – waste or otherwise – are regulated by the CNSC and that because of this, the CNSC is able to keep track of a licensee's nuclear substance inventory, regardless of its classification. In respect of potential use and whether nuclear substances are classified as waste, CNSC staff explained that whether a licensee foresees any future use for a nuclear substance is important in this classification. CNSC staff further explained how the classification of used nuclear fuel differs internationally and how this is addressed via the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*[20] (Joint Convention).

[20] International Atomic Energy Agency, *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* (1997), IAEA Doc. INFCIRC/546, 2153 UNTS 357, entered into force 18 June 2001 (Joint Convention).

131. The Commission asked staff to clarify the definitions for the classification of waste in the REGDOCs. CNSC staff stated that, although additional guidance on the classification of waste can be found in the IAEA's GSG-1, *Classification of Radioactive Waste*,[21] the terminology used in the REGDOCs aligns with CSA N292.0, *General principles for the management of radioactive waste and irradiated fuel from generation to storage or disposal*.[22] CNSC staff further explained that, although the terminology in the REGDOCs may differ from that used by the IAEA, the intent of the REGDOCs is to align with the international standards using the same terminology as the CSA Group standards.

132. Addressing the Commission's point about whether ambiguity in classification of radioactive waste remained within these REGDOCs, CNSC staff expressed the view that there was no ambiguity in this regard. CNSC staff stated that, although waste classification helped to assess waste volumes that may be accepted into a facility, it is really a high-level planning tool in considering the design of a facility. CNSC staff explained that the CNSC's regulatory framework focusses on the overall safety case of a facility and that this approach aligns with the IAEA's guidance.

Decision on REGDOC-2.11.1, Volume I

133. Following its consideration of REGDOC-2.11.1, Volume I, *Waste Management: Management of Radioactive Waste*, the Commission approves REGDOC-2.11.1, Volume I for publication and use. **DECISION**

Regulatory Document REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for the Disposal of Radioactive Waste, Version 2*

134. The Commission requested information about the "ecosystem approach" to regulation rather than a "site-specific approach," as raised by a stakeholder during consultation on REGDOC-1.2.1, REGDOC-2.11.1, Volume I and REGDOC-2.11.1, Volume III. The Commission noted that in staff's disposition of the stakeholder's comments on this topic, CNSC staff stated that the ecosystem approach would be considered for the next update to

[21] International Atomic Energy Agency, General Safety Guide No. GSG-1, *Classification of Radioactive Waste*, IAEA, Vienna, 2009.
[22] N292.0, *General principles for the management of radioactive waste and irradiated fuel from generation to storage or disposal*, CSA Group, 2019.

REGDOC-2.9.1. CNSC staff explained that, as with any new scientific concept, CNSC staff ensured that it stayed well-informed of research and advancements relating to the ecosystem approach to regulation and the guidance provided by international bodies including, the United Nations Scientific Committee on the Effects of Radiation, the IAEA, and the International Commission on Radiological Protection. CNSC staff confirmed that, although the CNSC regulatory framework does not include the ecosystem approach, CNSC staff would continue to review the science related to this approach as is matures, as well as international guidance, in determining whether it would be appropriate to recommend incorporating this approach into the CNSC regulatory framework.

135. Noting the iterative process in respect of design optimization, the Commission enquired about how CNSC staff would satisfy itself that a proponent's design is optimized. CNSC staff explained that activities such as entering a new phase of the project or a significant change in design would trigger the iterative design optimization process. CNSC staff stated that the facility design would be considered sufficiently optimized if, after the development of the waste acceptance criteria, the facility's resulting dose remained as low as reasonably achievable (ALARA), noting that ALARA-related optimization continues throughout the lifespan of the facility.

136. The Commission noted that REGDOC-2.11.1, Volume III considered uncertainties, but not variabilities, noting that, when dealing with natural environments in respect of facilities such as DGRs, variability is an important factor. CNSC staff acknowledged that, at times, there is not much differentiation between the terms. CNSC staff stated, however, that variability of natural environments was a factor that was considered through statistical evaluation of properties and bounding calculations to determine the most adverse effects that could be seen in that environment. CNSC staff also stated that, during a facility's operation, results from ongoing monitoring and geoscience verification programs were used to confirm modelling and bounding conditions. The Commission was satisfied with this response but noted that CNSC staff may consider documenting the distinction between those two terms within the REGDOC.

137. Upon request by the Commission, CNSC staff explained how the degradation and aging of barriers at a facility relate contextually to the timeframe for the operation of a facility. CNSC staff stated that the timeframe for a facility considers factors including dose and waste characterization, whereas a facility includes multiple barriers to consider the degradation that may be encountered over the timeframe.

Decision on REGDOC-2.11.1, Volume III

138. Following its consideration of REGDOC-2.11.1, Volume III, *Waste Management: Safety Case for the Disposal of Radioactive Waste*, Version 2 the Commission approves REGDOC-2.11.1, Volume III for publication and use. **DECISION**

Regulatory Document REGDOC-2.11.2, *Decommissioning*

139. The Commission noted that the CNSC's definition of "decommissioning," as provided in REGDOC-2.11.2, was different than other definitions for this term and had generated many comments from stakeholders, including CSOs and industry, during the REGDOC consultation process. CNSC staff explained that, in its definition for decommissioning, the CNSC aimed to align with the IAEA safety standards and CSA Group standards including CSA N292.0 and CSA N294:19, *Decommissioning of facilities containing nuclear substances*,[23] and also aimed to provide stakeholders the clarification that was requested. The Commission was satisfied with the information provided by CNSC staff on this point.

140. The Commission invited staff to address *in-situ* decommissioning for future reactors, since it was not a preferred decommissioning strategy for nuclear reactors. CNSC staff explained that a proponent must consider the decommissioning of a facility in the design phase and that this is something that the CNSC assesses at the early stages of a project. CNSC staff provided clarity on how this decommissioning may be conducted and that, with operating nuclear power plants and any new facilities, it is expected that the whole facility will be fully removed.

141. CNSC staff noted that, although REGDOC-2.11.2 aligns with Canada's *Radioactive Waste Policy Framework*, the CNSC was also shifting to better align with IAEA guidance in regard to *in-situ* decommissioning. CNSC staff outlined why the IAEA recommended against *in-situ* decommissioning, including historical misuses of this approach. An NRCan representative confirmed that the CNSC's approach is consistent with Canada's *Radioactive Waste Policy Framework* and also that *in-situ* decommissioning of nuclear facilities would be considered in the upcoming policy review.

[23] N294:19, *Decommissioning of facilities containing nuclear substances*, CSA Group, 2019.

142. Asked about *in-situ* decommissioning for research reactors, CNSC staff explained that REGDOC-2.11.2 provides the same guidance as CSA N294:19, limiting *in-situ* decommissioning as an option for legacy research reactor facilities only and added that this would not be an acceptable decommissioning strategy for proposed facilities.

143. In regard to the safety assessment for a proposed facility, the Commission noted that the requirements to demonstrate a safety case appeared to be very open-ended and complex and enquired about whether additional guidance was available for proponents. CNSC staff responded that the REGDOC reflects a broad range of nuclear facility proponents and that, for this reason, REGDOC-2.11.2 provides references to the more-detailed IAEA Safety Standards.

144. The Commission is satisfied with CNSC staff's explanation of *in-situ* decommissioning and its inappropriateness as a strategy for a proposed facility. The REGDOC would benefit from this being clearer. The Commission would also like the REGDOC to define a "legacy site" and to be clear respecting how the decommissioning of research reactors is to be treated in this regard.

Decision on REGDOC-2.11.2

145. Following its consideration of REGDOC-2.11.2, *Decommissioning* the Commission approves REGDOC-2.11.2 for publication and use, once text has been added to the document to accord with the clarifications that were provided orally: **DECISION**

- in what situations would *in-situ* decommissioning be considered as a viable decommissioning strategy
- the definition of a "legacy site"
- the decommissioning of research reactors

146. The Commission need not see this added text if it aligns with the oral submissions staff made in the public meeting.

Regulatory Document REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*

147. The Commission enquired about the four cost categories included in REGDOC-3.3.1. CNSC staff explained that these four categories for the development of a cost estimate are based

on the international structure for decommissioning costing and provided details on how the four categories were to be considered by licensees. CNSC staff also stated that, for decommissioning and large projects, cost estimates were on a cash flow basis rather than on operating and capital expenditures.

148. The Commission enquired about whether the contingency cost category included pandemics. CNSC staff explained that contingencies include uncertainties that are within the scope of a decommissioning project and added that, because a pandemic is a risk that is not within the scope of a decommissioning project, it would not be considered as part of the contingency cost category.

149. In regard to situations that would trigger an update to decommissioning cost estimates, CNSC staff explained that the CNSC has a regular five-year cycle for the review of financial guarantees and also explained that operational changes or changes to the financial situation of a licensee could trigger a review of the acceptability of a financial guarantee.

150. The Commission enquired about the basis for a five-year cycle for the review of financial guarantees. CNSC staff explained that the cost estimate was based on a preliminary decommissioning plan (PDP) and that licensees are required to update their PDP every five years, a time period that adequately allowed licensees to re-evaluate their operation, inventories and other changes that may have occurred at their facility. CNSC staff also explained that licensees had to report annually on the value and validity of their financial guarantees, how CNSC staff assessed the validity of the financial guarantees and noted that licensees could revise cost estimates earlier than the five-year cycle, if applicable.

151. Further on that topic, CNSC staff explained that additional regulatory action could be taken if a situation requiring it arises, as was done with the recent subsection 12(2) of the *General Nuclear Safety and Control Regulations*[24] request for licensees to report on their financial guarantees in response to the COVID-19 pandemic and economic downturn.

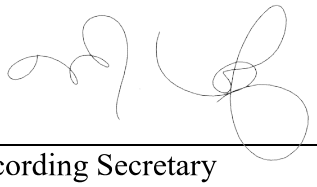
Decision on REGDOC-3.3.1

152. Following its consideration of REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*, the Commission approves REGDOC-3.3.1 for publication and use. **DECISION**

[24] SOR/2000-202

Closure of the Public Meeting

153. The public meeting closed at 3:18 P.M. The Commission convened for a closed session to consider the matters raised for its decision. These minutes reflect both the public meeting itself and the Commission's decisions taken as a result of the meeting.



Recording Secretary — 16-09-2020 — Date

Recording Secretary — 16-09-2020 — Date

Recording Secretary — 18-09-2020 — Date

Secretary — 16-9-2020 — Date

APPENDIX A

CMD	Date	e-Docs No.
20-M7	2020-06-03	6311057
Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held remotely on Wednesday and Thursday, June 17 and 18, 2020		
20-M8	2020-06-04	6312071
Approval of the Minutes of Commission Meeting held on March 3, 2020		
20-M10	2020-06-10	6316013
Status Report Status Report on Power Reactors Submission from CNSC Staff		
20-M16	2020-06-12	6317067
Status Report Status Report on Nuclear Fuel Cycle Facilities Submission from CNSC Staff		
20-M11.1	2020-06-10	6315709
Information Items January 12, 2020 false alert by Emergency Management Ontario concerning the Pickering Nuclear Generating Station Presentation from Emergency Management Ontario (EMO)		
20-M11	2020-06-09	6314393
Information Items January 12, 2020 false alert by Emergency Management Ontario concerning the Pickering Nuclear Generating Station Submission from CNSC Staff		

20-M11.A	2020-06-10	6313697
Information Items January 12, 2020 false alert by Emergency Management Ontario concerning the Pickering Nuclear Generating Station Presentation from CNSC Staff		
20-M9	2020-06-09	6314049
2019 Integrated Regulatory Review Service (IRRS) Mission Presentation from CNSC Staff		
20-M14	2020-06-10	6314804
June 2019 International Atomic Energy Agency (IAEA) Emergency Preparedness Review Mission to Canada – Mission Findings and Canada's Response Presentation from CNSC Staff		
20-M17	2020-06-03	6311454
Event Initial Report Alberta Health Services: Exposure above regulatory limit of Nuclear Energy Worker Submission from CNSC Staff		
20-M15	2020-06-10	6315603
Information Item Presentation from the Independent Electricity System Operator (IESO) on the duties and role of the IESO in Ontario, with focus on the supply gap identified in the IESO's 2017 Long Term Energy Plan and the impact on nuclear power plants Presentation from IESO		
20-M13.A	2020-06-03	6310942
Decision Items on Waste and Decommissioning Regulatory Documents - REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization* - REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste* - REGDOC-2.11.1, *Waste Management Volume III: Safety Case for the Disposal of Radioactive Waste, Version 2* - REGDOC-2.11.2, *Decommissioning* - REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* Submission from CNSC Staff		

20-M13.B	2020-06-01	6308768
Decision Items on Waste and Decommissioning Regulatory Documents - REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization* - REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste* - REGDOC-2.11.1, *Waste Management Volume III: Safety Case for the Disposal of Radioactive Waste, Version 2* - REGDOC-2.11.2, *Decommissioning* - REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* Presentation from CNSC Staff		